CLAIMS

1-31. (Cancelled)

32. (Original). A device for the measurement of lymphocyte activation, comprising,

means for incubating a sample containing a mixed population of cell types including a plurality of subsets of lymphocytes where each subset includes lymphocytes with characteristic determinants that distinguish one subset form another, with an inducing agents selected from the group consisting of mitogens and antigens;

means for separating a selected subset of lymphocytes from said sample;

means for lysing lymphocytes in said selected subset to release an activation-correlated intracellular component selected from the group consisting of ATP, NADP, and PCNA;

means for measuring said activation-correlated intracellular component; and

means for determining activation of lymphocytes for said selected subset of lymphocytes from said level of said activation-correlated intracellular component measured in said measuring step.

33. (New) A method for detecting activation of lymphocytes comprising the steps of:

incubating a sample containing a mixed population of cell types including a plurality of subsets of lymphocytes where each subset includes lymphocytes with characteristic determinants that distinguish one subset from another, with an inducing agent selected from the group consisting of mitogens and antigens; then

separating a selected subset of lymphocytes from said sample; then

lysing lymphocytes in said selected subset to release an activation-correlated intracellular component selected from the group consisting of ATP, NADP, and PCNA; then

measuring a level of said activation-correlated intracellular component; and

determining activation of lymphocytes for said selected subset of lymphocytes from said level of said activation-correlated intracellular component measured in said measuring step,

wherein said step of separating comprises the steps of contacting said sample with a solid support having a specific binding substance, said specific binding substance being specific for at

least one characteristic determinant of said selected subset of lymphocytes, said contacting step resulting in the formation of a complex of cells, binding substance and solid support; and removing said complex from a remainder of said sample; or

wherein said inducing agent is selected from the group consisting of drugs, organic chemicals, inorganic chemicals, metals, tumor cell proteins, and proteins derived from transplanted organisms; or

wherein said subset of lymphocytes is selected from the group consisting of T lymphocytes, helper T lymphocytes, natural killer T lymphocytes, and cytotoxic T lymphocytes; or

wherein said intracellular component is ATP, and further comprising the steps of determining a level of ATP in a control sample and comparing said level of ATP in said control sample to said level of ATP identified in said detecting step.

34. (New) A method as recited in claim 33 wherein said step of separating comprises the steps of contacting said sample with a solid support having a specific binding substance, said specific binding substance being specific for at least one characteristic determinant of said selected subset of lymphocytes, said contacting step resulting in the formation of a complex of cells, binding substance and solid support; and removing said complex from a remainder of said sample.

35. (New) A method as in claim 34 where said antigen is a virus or a bacteria or a subcomponent thereof selected from the group consisting of O fever cells, PPD, tetanus toxoid, OSPA, OSPB, OSPC, gp 120 protein, and peptides derived from gp 120.

36. (New) A method according to claim 33 wherein said inducing agent is selected from the group consisting of drugs, organic chemicals, inorganic chemicals, metals, tumor cell proteins, and proteins derived from transplanted organisms.

37. (New) A method according to claim 33 wherein said subset of lymphocytes is selected from the group consisting of T lymphocytes, helper T lymphocytes, natural killer T lymphocytes, and cytotoxic T lymphocytes.

38. (New) A method according to claim 34 wherein said characteristic determinant is a characteristic determinant of T cells and is selected from the group consisting of a functional marker, a marker of a particular differentiation stage, and an activation marker.

39. (New) A method according to claim 34, wherein said solid support comprises magnetic or paramagnetic material.

40. (New) A method as recited in claim 39 wherein the step of separating said complex is performed by magnetic separation.

41. (New) A method according to claim 34, wherein said solid support comprises polystyrene.

42. (New) A method according to claim 34 wherein said detecting step includes the step of adding luciferin to said intracellular component released from said lymphocytes in said subset of lymphocytes.

43. (New) A method according to claim 34, wherein the said specific binding substance is an antibody.

44. (New) A method according to claim 34, wherein said specific binding substance is a cytokine.

45. (New) A method according to claim 33 wherein said intracellular component is ATP, and further comprising the steps of determining a level of ATP in a control sample and comparing the level of ATP in the control sample to the level of ATP identified in said detecting step.

46. (New) A method according to claim 45 wherein said control sample is liposomes containing ATP.

47. (New) A method for detecting activation of lymphocytes comprising the steps of:

obtaining a blood sample from a patient, wherein said blood sample contains a mixed population of cell types including a plurality of subsets of lymphocytes where each subset includes lymphocytes with characteristic determinants that distinguish one subset from another,

incubating said blood sample with an inducing agent selected from the group consisting of mitogens and antigens; then

separating a selected subset of lymphocytes from said sample; then

lysing lymphocytes in said selected subset to release an activation-correlated intracellular component selected from the group consisting of ATP, NADP, and PCNA; then

measuring a level of said activation-correlated intracellular component; and

determining activation of lymphocytes for said selected subset of lymphocytes from said level of said activation-correlated intracellular component measured in said measuring step.